ABOUT THE AUTHOR

The ARCHICAD BASICS Training Guide was developed by Thomas M. Simmons of ARCHVISTA Building Technologies. The author, Thomas M. Simmons, spent eleven years as an architect and served as the Director of Design Technology for EHDD Architects, an award-winning and internationally acclaimed architecture firm, before starting his company, ARCHVISTA. While at EHDD Architects, he was instrumental in integrating and managing Archicad on a variety of projects including single-family houses, commercial buildings, libraries and aquariums.

Simmons received a Master of Architecture degree from the University of California, Berkeley, and a Bachelor of Environmental Design degree from Texas A & M University. He has been a speaker on a variety of subjects including Beginning to Advanced ArchiCAD, Multimedia in Architecture, Building Information Modeling and Architectural Visualization.

ARCHVISTA has produced several notable projects for the architectural and ArchiCAD markets including the acclaimed Inside NASA - NASA Virtual Tours; the Lawrence Berkeley National Laboratory Building Technology Facility; the award-winning Architectural Record, Record Houses CD-ROM’s; and the award-winning visualization of the American Hebrew Academy with Aaron Green Architects.

- To learn more about ARCHVISTA visit the following link : http://www.archvista.com

Most recently ARCHVISTA has been recognized for it’s education programs that include ArchiCAD training as well as continuing education programs for the American Institute of Architects. We offer the following online education programs:

LEARNVIRTUAL which is focused on technology and continuing education training including our ArchiCAD BIM Technology program that offers weekly online courses as well as the largest library of on-demand video training for ArchiCAD.

- To learn more about LEARNVIRTUAL visit the following link : http://www.learnvirtual.com

DESIGNrealized which explores project case studies from architects, engineers and contractors. Our speakers have included leading AEC and technology companies including HOK, SOM, ZGF, Gensler, Houzz, Turner Construction, Perkins+Will, ARUP and Hensel Phelps.

- To learn more about DESIGNrealized visit the following link : http://www.designrealized.com
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WHAT IS THE BIM PROCESS?

Architectural software is evolving from an “automator” of two-dimensional drafting to a three-dimensional building simulator known as a BIM, or Building Information Modeling.

As a result of this evolution, the architect’s ability to construct a “virtual building” on a desktop computer with integrated 3D-2D model-based technology and linked building information provides faster, higher-quality results and a richer design process. Risk is reduced, design intent is maintained, quality control is streamlined, communication is clearer, and analytic tools are more accessible.

Lower-level tasks such as drafting, view coordination, document generation, and schedule creation are automated. Drawings that represent different views of the same building object are automatically updated when modified.

BIM finally allows us to harness the power of computers in a real value-added design process that doesn't just mimic drafting.

In addition to transforming the architect’s own practice, ownership of the 3D computer model will carry important competitive advantages in procuring all future work associated with the same building.
TRADITIONAL VS BIM

So what is the difference between traditional CAD drafting and Building Information Modeling? Traditional CAD is the world of lines, arcs, circles and blocks. With traditional CAD, your drawing is a 2D representation of how the building will be built. It is very similar to hand drafting but automated with computer technology.

With Building Information Modeling, you construct a building using building elements: floor slabs, walls, roofs, windows, doors, stairs and other objects. A Building Information Model uses intelligent objects to create building elements.

With object oriented CAD each object in the system represents a building element with a behavior and intelligence relevant to that element. For example, the behavior of a door is different than the behavior of the wood used to construct it.

Because you have the real model of a building, not just a 2D representation of one, you can ask it building specific questions. For instance, you can get detailed reports on egress analysis, heat loss analysis, code compliance or cost takeoffs. From the Building Information Model, buildings can be analyzed with respect to building mass, overshadowing and visual appearance. Archicad can automatically generate plans, elevations and sections, perspective views, animations and virtual reality views.

BENEFITS OF THE BIM PROCESS

Architects and building professionals using integrated 3D CAD software generate a wealth of valuable building information that can be used for both the traditional architectural practice as well as for many new fields and services.

Some of the benefits to the building industry from a Building Information Modeling approach are:
• Building master planning, design and development
• Creation of renderings, animations and virtual reality scenes
• Production drawings, details and schedules
• Building marketing
• Management of building spaces and assets
• Post-occupancy studies and simulation of design changes
• Analysis and visualization
• Content development for electronic building component objects including product data and links to manufactures websites
• Long-term programming, maintenance and operation.
When an architect uses an integrated and intelligent parametric object-based system rather than a 2D drafting system, firms will see the payback in their design process through improved productivity, reduction of error, and faster production through automation.

The following example from Dianne Davis, President of AEC Infosystems, shows the benefits of a project using the Building Information Modeling process:

1. We'll start with a client needing a room and establishing some general requirements. In 2D electronic drafting, we would show a floor plan, walls as polylines on a CAD Layer, a door symbol, a room stamp, and notations. When it is time to place our drawings on paper for plotting, we would organize the drawings into construction sets. Other information would be handled separately and not integrated into our CAD file.

2. With a Building Information approach, the model can support integrated data that support design decisions. We can start with a space that not only carries a plan view but also carries its geometric size, square footage, and volume. We can create and do reports on stacking diagrams and the like.

3. As the design progresses, we can use an intelligent wall for quantity take-offs, thermal or energy calculations, and other analysis. This is the same wall used in our construction document views and our rendering. Even at this level, we can more fully determine whether our design meets our client's needs.

4. Product objects such as doors and windows allow a higher refinement to our design. Calculations and costing, which used to happen only after construction sets were more complete, can be done in the first days of a project.

5. Walls or objects can automate the creation of details, schedules, and levels of structure and provide product-specific installation needs. 4D construction scheduling can be tied to objects for construction sequencing.

6. Our design complete, the model information, including traditional CAD views and product data, is ready to automatically populate facility management software. Clients that manage buildings want these models, and architects have a value-added product once the design is complete.

7. The benefits of object intelligence enhance our process in other ways as well. What were simple graphic elements have been given intelligence to help automate the task they represent. As an example, this Drawing Title is now an intelligent object that automatically shows the scale of the drawing it supports. If the scale of the drawing changes, so does the indicator on the graphic. This type of automation greatly reduces construction document errors and coordination.
INTERFACE BASICS

Below is a diagram showing the basic ArchiCAD controls, menus and navigation controls:

To open the Tool Settings double click the tool in the ToolBox or click the tool button in the Infobox:

Click the Settings Dialog button or Double click a tool to open the Settings for a tool.
NAVIGATION BASICS

To navigate to the Floor Plan click the F2 key on your keyboard or double click the Story in the Navigator:

To navigate to the 3D Window click the F3 key on your keyboard or double click a 3D view in the Navigator:
IMPORTANT DRAFTING AIDS

Guidelines

Red Guidelines provide auto snap when drawing lines, walls and any other elements for any angle including presets for common angles such as vertical, horizontal, 45 degrees, etc.

You can also create Guidelines at any point using pull of guides or manual guides.

Tracker

Distance input is simple and quick with the Tracker. All you do is drag the cursor in the direction you want to draw and type into the keyboard the distance. The Tracker will auto-fill the length you input.

If you click your Tab Key you can also access Angle, X, Y and Z coordinate input.